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Binding Energies of Excitons in Symmetric and Asymmetric Coupled Double-Quantum Well Structures in a Magnetic Field

Esin KASAPÖĐLU, Hüseyin SARI, Yüksel ERGÜN, Sezai ELAGÖZ
Cumhuriyet University, Physics Department, 58140 Sivas-TURKEY

Naci BALKAN

University of Essex, Department of Physics, Colchester, U.K.

İsmail SÖKMEN

Dokuz Eylül university, Physics Department, İzmir-TURKEY



[Keywords](#)

[Authors](#)



phys@tubitak.gov.tr

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Abstract: The binding energy of excitons in the symmetric and asymmetric coupled double GaAs/Ga_{1-x}Al_xAs quantum wells is calculated by using variational approach. Results have been obtained as a function of the potential symmetry, the size of the quantum well, and the coupling parameter of the wells in the presence of a magnetic field applied parallel to the growth direction. The role of the asymmetric barriers, magnetic field, barrier and well width in determining the tunability of the excitonic binding parameters of the GaAs/Ga_{1-x}Al_xAs system is discussed.

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